

No new matter has been added to the application.

We now turn to the specific rejections.

EXAMINER'S STATEMENT

The Examiner states that:

"The amendments to the specification, filed March 5, 2001, have not been entered, because the cited locations for the text to be entered do not correspond to the text of the originally filed pages. The amendments must correspond to the originally filed pages. Pages of text filed March 5, 2001 have not been entered; therefore, amendments should not be directed to locations present in these unentered pages."

Applicant respectfully traverses this action.

The amendments are made to the substitute specification filed earlier which will be used by the USPTO to print the issued patent.

Applicants amended the substitute specification in issued USP 6,054,499 also examined by Rabon Sargent.

Applicants request that these amendments be entered into the substitute specification.

REJECTION OF CLAIMS 2-28 UNDER 35 U.S.C. 112 (2nd)

Claims 2-28 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The Examiner states that:

"Applicants' claiming of the pressure filled can and prepolymer is confusing. It would seem that the can contains the prepolymer; the significance of specifying them separately is unclear."

Within claims 17 and 28, applicants have referred to the prepolymer composition of claims 1 and 15; however, claims 1 and 15 are directed to a pressure filled can.

Within line 2 of claim 16, "softening" has not been spelled correctly."

Applicants respectfully traverse this rejection.

These identified claims have been amended as suggested by the Examiner. Therefore, these rejections have been overcome.

Reconsideration and withdrawal is respectfully requested.

REJECTION OF CLAIMS 7, 9, 21 and 22 UNDER 35 U.S.C. 112 (1st)

Claims 7, 9, 21 and 22 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s) at the term the application was filed, had possession of the claimed inventions.

The Examiner states that:

"Applicants have failed to provide adequate support for the claimed bases for the weight percents. Within claims 7 and 9, the basis is the prepolymer composition. Within claims 21 and 22, the basis is the prepolymer component. The bases between the two sets of claims do not agree."

Applicants respectfully traverse this rejection.

These claims have been amended as suggested by the Examiner.

Therefore, these rejections have been overcome.

Reconsideration and withdrawal is respectfully requested.

JOINT INVENTORS

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a).

Applicants will examine inventorship when claims are allowed and make any appropriate correction.

REJECTION OF CLAIMS 6-8, 20 and 21 UNDER 35 U.S.C. 103 (a)

Claims 6-8, 20 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pauls ('412) in view of Falkenstein et al. ('313) as applied to claims 1-5, 9-19 and 22-28 above, and further in view of Friedman ('827) and either Nichols et al. ('646) or Burkhart et al. ('270 or '566).

"Paul discloses a storage stable polyurethane prepolymer composition, having an NCO content of 5 to 25 percent by weight, which may be dispensed from a pressure can to yield a dimensionally stable foam. See abstract and columns 2-4.

Paul is silent regarding the use of phosphorous containing compounds as softeners, castor oil-based polyols, and polybutadiene; however, the use of each these components within

polyurethane foam formulations was known at the time of invention. Falkenstein et al teach

at column 3, lines 59-66 that the use of phosphorous containing compounds soften the foam and increase flame resistance. Firedman teches the use of phosphorous containing polyols to provide flame resistance and further teaches at column 5, lines 62+ that castor oils may be used to prepare prepolymers. Burkhardt et al disclose the use of liquid polybutadiene as a foam additive and a cell opening agent within polyurethane foams. See column 3, lines 62+ within Burkhardt et al. Furthermore, Nichols et al. disclose at column 1, lines 33-35 the use of polybutadienes as cell opening agents for polyurethane foams. The polybutadienes of Nichols et al. are considered to encompass liquids, because patentees refer to them as bleeding out, giving the foam an oily feel, at column 1, lines 50 and 51.

Despite Applicant's argument concerning the selection and combination of the respective components, the position is maintained that it would have been obvious to utilize known components for their known functions within polyurethane compositions. It has been held that is prima facie obvious to utilize a compound for its known function (In re Linder, 173 USPQ 356; In re Dial et al., 140 USPQ 244); therefore, one of ordinary skill in the art would have been motivated to utilize the known polyurethane foam components with the teachings of the Pauls reference, so as to obtain a pressure can dispersible prepolymer capable of yielding a foam having improved flame resistance, dimensional stability, and softness. Applicants have failed to provide any showing of unexpected results attributable to the claimed composition.

Applicants' argument that Falkenstein et al. are concerned with a polyisocyanurate, rather than a polyurethane and that, as a result, their teachings should not be applied to a polyurethane composition is not agreed with, because polyisocyanurate and polyurethane foams are derived from the same reactant species, polyisocyanurates contain urethane linkages, and the skilled artisan recognizes that the two species of compositions are closely related.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, THIS ACTION IS MADE FINAL. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37b CAR 1.136(a).

Applicants respectfully traverse this rejection.

The Examiner rejected just above Claims 1, 3, 7-17 and 21-21-29 under U.S.C. 103(a) as being unpatentable over Pauls ('412) in view of Falkenstein et al ('313) and Friedman ('827) and Burkhardt et al ('270 or '566) citing each reference for its individual teaching and then combining them alleging that a "prima facia" cases of obviousness has been made.

Pauls ('412) never teaches or suggests the use of phosphorous containing compounds in these polyurethane polymers. It fails as a primary reference.

The Examiner is in error concerning Falkenstein ('313). The Falkenstein reference, though concerned with prepolymers, differs significantly from the present invention. The foams produced

these polyurethane polymers. It fails as a primary reference.

The Examiner is in error concerning Falkenstein ('313). The Falkenstein reference, though concerned with prepolymers, differs significantly from the present invention. The foams produced there are polyisocyanurate foams. Such foams are normally not produced from pressurized cans, but in a commercial plant from tanks by mixing the components in the spray head. Polyisocyanurate foams are based on a trimerization reaction of isocyanate groups using special catalysts, whereas the polyurethane foams of the present invention are based on the reaction of isocyanate groups with a hydroxy compound. The prepolymer compositions therefore need different catalysts, and the polymeric foams obtained therefrom have different characteristics and fields of application.

Why one would one of skill in the art combine these teachings to produce the present invention? Applicants argue they would not. One reference describes polyurethane and the other describes polyisocyanurate foams. There is no teaching or suggestion in either reference of the existence of the other. The "obvious-to-try" standard is not a proper standard for 35 U.S.C.

103.

The Examiner has cited each of the references for its specific teaching as listed above and except that:

Friedman teaches that his phosphorus containing compounds must have reactive hydroxyl groups which react to incorporate the Phosphous containing group into the polyurethane matrix. This is unlike Applicant's invention of non-reactive phosphorous contain fire retardant compounds. The Burkhart et al. '566 is not prior art to Applicants' invention due to Applicants foreign filing date. The filed certified translation of the foreign application is in the parent application and can be transferred. A copy is also enclosed. The Examiner's statements of these last two references individual teachings are essentially correct.

Applicant respectfully urges that the Examiner's position that has made a valid prima facia case of obviousness is in error.

Although the cases cited by examiner hold that it is prima facia obvious to use a compound for its known function as the examiner has stated in each of In re Hinter, 173USPO356 and in re Dial et al. 140 USPQ244 those references specifically suggested combining the claimed elements.

In Applicant case there is no such suggestion in any of the cited references that all of the elements of applicants novel combination could be combined. It has been held in Custom

Accessories Inc. v Jeffrey-Allan Industries, Inc. 1 U.S.P.Q.2d 1196 (Fed. Cir. 1986) that "casting an invention as 'a combination of old elements' leads improperly to an analysis of the claimed invention by the parts, not by the whole. The critical inquiry is whether there is something in the prior art as a whole to suggest the desirability, and thus the obviousness, of making the combination.

A traditional problem with focusing on a patent as a combination of old elements is the attendant notion that patentability is undeserving without some 'synergistic' or 'different' effect. Here, the district court spoke of the need for 'a new and useful result.' Such tests for patentability have been soundly rejected by this court. Though synergism is relevant when present, its 'absence has no place in evaluating the evidence on obviousness.' *Custom Accesories inc. v. Jeffrey-Allan industries, inc.*, 1 U.S.P.Q.2d 1196 (Fed. Cir. 1986)."

The Examiner has therefore not made out a prima facia case of obviousness and no comparative data should be required on this record.

In In re Geiger, 2 U.S.P.Q. 2d 1276 (Fed. Cir. 1987) it was held that "although the fact that each of the three components of the composition used in the claimed method was conventionally employed in the art for treating cooling water systems, to employ these components in combination for their known functions and to optimize the amount of each additive were not regarded as obvious. Obviousness cannot be established by combining the teachings of the prior art to produce a claimed invention, absent some teaching, suggestion or incentive supporting the combination. At best, in view of the prior art, one skilled in the art might find it obvious to try various combinations of these known scale and corrosion prevention agents. This not the standard of 35 U.S.C. §103. *In re Geiger*, 2 U.S.P.Q.2d 1276 (Fed. Cir. 1987)."

In this case there is no teaching, suggestion or incentive supporting Examiners combination of the cited prior art.

The Examiner has shown no suggested combination of the cited references other than Applicants own specification. An Examiner's obvious-to-experiment standard has been held to be acceptable in In re Dow Chemical to 5 U.S.P.Q.2d 1529 Fed. Cir. 1988). That case held that "an obvious-to-experiment standard is not an acceptable alternative for obviousness. Selective hindsight is no more applicable to the design of experiments than it is to the combination of prior-art teachings. There must be a reason or suggestion in the art for selecting the procedure

used, other

than the knowledge learned from the applicant's disclosure. *In re Dow Chemical Co.*, 5 U.S.P.Q.2d 1529 (Fed. Cir. 1988)."

Thus this case Examiner has failed to make out a *prima facia* case of obviousness on this record, with or without, Burkhart et al ('566)

A declaration showing surprising results was submitted in the EP application last year and was effective to allowed a claim 1 substantially the same as the presently amended Claim 1 claiming a mixture of aromatic polyols and aliphatic polyols. These polyols show an unexpected decrease in flammability.

Unfortunately, the primary technical inventor Mr. Schumaker is ill and now has limited capabilities.

A similar Declaration is expected to be filed shortly in this case.

SUMMARY

Based on the above amendments and arguments, Applicants argue that the present claims are of a form and a scope for allowance. Prompt notification thereof is respectfully requested.

Applicant has amended the claims to overcome the §112 rejections and has shown that Examiner has failed to make out a *prima facia* case of obviousness under §35 U.S.C. 103.

Therefore Applicant respectfully requests that these rejections be withdrawn and that in view with the terminal disclaimer filed in the parent application that this case is in condition for allowance.

Alternatively, Applicants request that the final rejection be withdrawn and a next non-final rejection be issued.

Alternatively, Applicants request this amendment be entered for the purpose of appeal.

A NOTICE OF APPEAL AND FEE AND A PETITION FOR EXTENSION OF TIME AND FEE ARE ENCLOSED.

APPLICANTS WILL CONSIDER ANY EXAMINER'S AMENDMENTS WHICH WILL ADVANCE THIS APPLICATION TO ISSUE.

The Examiner is requested to call the undersigned at (650) 324-1677 X20 with any comments or questions.

Respectfully submitted,

Date: March 18, 2002

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Enclosures:

- Notice of Appeal and Fee
- Petition for Extension of Time and Fee (2 mo.)
- Substitute clean pages for amendments to the specification and the claims
- Substitute specification and declaration (filed earlier)

IN THE CLAIMS:

1. (Three Times Amended) A pressure [can which is filled with] a prepolymer composition for producing one component polyurethane insulating foams with fire-retardant properties from pressure tanks, wherein said [filled pressure can and] prepolymer composition comprises:

[(A) a prepolymer composition itself comprising:]

(a) a prepolymer component having at least one polyurethane (PU) prepolymer with a content of NCO groups of 4 to 20 wt% said prepolymer being prepared from aromatic polyisocyanates and,

[(b)] polyester-polyols having a [molecular weight of between 1000 and 2000 daltons,] hydroxyl number between about 100 and 300, and [(c) optionally liquid polybutadiene, and]

(b) [(d)] a propellant component,

wherein said prepolymer component is [substantially] halogen-free and has a content of 5 to 40 wt%, of softening phosphates, phosphonates or combinations thereof having [with] the formulae O=P(OR)₃, and O=P(OR)₂R, wherein R is the same or different and selected from alkyl, aryl, alkyl aryl or arakyl groups having up to 10 carbon atoms based on the prepolymer component[,

said prepolymer component optionally further includes a flame-retardant additive which is

free from chlorine and bromine,

wherein said polyurethane prepolymer is a prepolymer prepared by the reaction of aliphatic or aromatic polyisocyanates with castor oil having a hydroxyl number of between about 100 and 300, and

(B) a pressure can].

2. (Three Times Amended) The [pressure filled can and] prepolymer composition of claim 1, wherein [the polyurethane (PU) prepolymer is prepared from aliphatic polyisocyanates or aromatic polyisocyanates and polyester polyols, and]

the propellant is a fluorocarbon.

3. (Three Times Amended) The [pressure filled can and] prepolymer composition of claim 2, wherein said prepolymer [the polyisocyanate] is prepared from monomers selected from the group consisting of [hexamethylene-1,6-diisocyanate, naphthalene-1, 5-diisocyanate,]

tolylene diisocyanate, [isophorone diisocyanate, and diphenylmethane diisocyanate [and dicyclohexylmethane diisocyanate].

Claims 4 and 5 are cancelled without prejudice or disclaimer.

6. (Three Times Amended) The [pressure filled can and] prepolymer composition of claim 2 wherein the polyester polyols are at least partly phosphorous-modified.

Claims 7 and 8 are cancelled without prejudice or disclaimer.

9. (Twice Amended) The [pressure filled can and] prepolymer composition of claim 1, wherein propellant content is 5 to 40 wt% of the prepolymer composition.

10. (Twice Amended) The [pressure filled can and] prepolymer composition of claim 1, wherein the propellant component comprises propane, butane, dimethylether or mixtures thereof.

11. (Twice Amended) The [pressure filled can and] prepolymer composition of claim 1, wherein the propellant component contains fluorocarbon selected from the group consisting of C₂HF₅, C₂H₂F₄ (unsymmetrical), C₂H₃F₃, C₂H₄F₂ (unsymmetrical) and mixtures thereof.

12. (Twice Amended) The [pressure filled can and] prepolymer composition of claim 1, wherein the prepolymer composition additionally contains a flame-retardant additive which is free from chlorine and bromine.

13. (Twice Amended) The [pressure filled can and] prepolymer composition of claim 12, wherein the flame-retardant additive is selected from the group consisting of melamine, melamine cyanurate, dimelamine phosphate, melamine phosphate, cyanodiamide, dicyanodiamide, aluminum trihydrate, ammonium polyphosphate and mixtures thereof.

14. (Twice Amended) The [pressure filled can and] prepolymer composition of claim 1, wherein the initial service viscosity of the polyurethane prepolymer at 20°C is 5000 to 20000 mPa.s.

15. (Three Times Amended) The [pressure filled can and] prepolymer composition of claim [11], 1 wherein the initial service viscosity of the polyurethane prepolymer is between 8000 to 15000 mPa.s.

16. (Three Times Amended) The [pressure filled can and] prepolymer composition of claim 3 [1] wherein [softning] softening phosphates and phosphonates are used for setting polyurethane insulating foams to be flame-retardant, and

the propellant is a fluorocarbon.

Claims 17-29 are cancelled without prejudice or disclaimer.

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PREPOLYMER COMPOSITION FOR INSULATING FOAMS

RELATED APPLICATIONS

This application is a continuation of U.S. Ser. No. 08/501,020 filed October 16, 1995, now abandoned, which is a Continuation of PCT/EP94/00385 filed February 10, 1994, which have priority on DE applications German P43 03 894.2 filed February 10, 1993 and German P43 03 848.4 filed February 10, 1993.

BACKGROUND

Page 1, line 11 to page 2, line 5

The inventive prepolymer composition is used for producing polyurethane insulating foams which are used particularly for insulating purposes by foaming in cavities. The main areas of application are the construction industry, but also technical products in which cavities must be filled to avoid condensation nests. When one-component polyurethane foams are spoken of, these are applied by discharging the prepolymer compositions from pressure tanks, for example aerosol cans, on the spot with the help of propellants with a bulk density of 10 to 50 g/l, and processed. One component foams are moisture-hardening, i.e. they can be cured solely with the help of the moisture contained in the air.

Two-component polyurethane foams require a second hydroxy component for curing the prepolymer composition, generally a polyol which must be added directly before foam formation. Curing can be accelerated by catalysts. Bulk densities in two component foams are characteristically 10 to 100 g/l.

CLEAN TEXT FOR PAGE 2, LINES 2 TO 5 OF THE SPECIFICATION

Transitional forms between one component (1C) and two component (2C) (hereinafter (1C) and (2C)) foams are possible. In this case a quantity of a hydroxyl component insufficient for reacting the isocyanate groups is added to the prepolymer before discharge. Such "transitional foams (hereinafter referred to as 1.5C foams or 1.5C) are also covered by the invention.

CLEAN TEXT FOR PAGE 7, LINE 27 TO PAGE 8, LINE 16 OF SPECIFICATION

The propellant component of the prepolymer composition expediently constitutes 5 to 40 wt%. The propellant content is 5 to 40 wt% of the prepolymer composition. The CO₂ content in the propellant can be for example about 5 wt%, based on the total propellant component. The content of gases not condensable under the prevailing pressure conditions should be such that the volume based on the empty space in the pressure tank yields a pressure of about 8 to 10 bars, depending on the relevant national specification for pressure tanks (aerosol cans). The empty space in the pressure tank is the space assumed by the uncondensed components of the prepolymer composition.

The liquid butadiene is optionally added to the prepolymer composition in solution along with an emulsifier - for example in a weight ratio of 80/20-, preferably in solution with a hydroxy vegetable oil suitable for controlling the isocyanate content of the PU prepolymer. The liquid polybutadiene has a content of 0.01 to 2 wt% of the prepolymer composition. It has proven

especially suitable to use castor oil with a hydroxyl number of 160, but any other hydroxy vegetable oils and hydroxy polyethers and polyesters can also be used. These are hydroxy components as are conventionally used for modifying viscosity in the formulation of prepolymer compositions.